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## Neuroscience, epigenetics and the intergenerational transmission of social life: exploring expectations and engagements

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Research in neuroscience and epigenetics is prominent in biomedicine and beyond. Some policy makers, health professionals and other citizens have intuited particular implications from these 'social biologies', leveraging them to support policies that many find problematic (e.g., around the early years). This enjoins scholarly attention to the uses to which science is put, but also to how and why biomedical knowledge comes to be imbued with certain kinds of salience (both by 'advocates' and by 'critics').

**key words** neuroscience • epigenetics • expectations • critique

### Promissory science

In 2010, a news piece in the major journal *Science* appeared entitled 'The seductive allure of epigenetics'. Its subtitle asked the following questions: 'Could chemical changes to DNA underlie some of society's more vexing problems? Or is this hot new field getting ahead of itself?' (Miller, 2010: 24). A number of other commentary pieces and editorials have also appeared within the biomedical literature exploring the 'hot new field' of epigenetics. This area of research seeks to examine the molecular mechanisms that impact the expression of the genome, and which produce changes that may be heritable across generations – specifically, of cells, but potentially even of organisms. Precise definitions vary, however, as researchers seek to define the field and demarcate its boundaries. Epigenetics, then, can be seen as a site of (sometimes) competing discourses and expectations regarding what the science is, what it can do, and what its implications are for society (Pickersgill et al, 2013).

Resonant definitional issues are likewise apparent in other areas of biology – perhaps most prominently in the neurosciences, where some kind of focus on the neurological draws together concepts, techniques and disciplines that might otherwise be quite distant. There, promissory discourses circulate widely – galvanising research support and civil engagement, but also energising contestation and critique (Pickersgill, 2013). Both hopes and fears around the perceived implications of neuroscience (and increasingly epigenetics) help to propel this domain of biomedicine further into the

public sphere, in so doing entangling it within the discourses of health, social, and economic policy and practice.

## Social biologies

Broadly, both epigenetics and neuroscience can be considered to be part of what Meloni (2014) calls a 'social turn' within biology. This characterisation aims to capture the great degree to which research in what (following Meloni) we might call the 'social biologies' regards the environment as salient in shaping biological structure and function.<sup>1</sup> In epigenetics, we can see the 'molecularisation of biography' (Niewöhner, 2011: 279), through which the social life of an organism comes to be implicated in phenotypic expression. Likewise, in neuroscience, conceptualisations of the brain are emerging that deem this 'plastic', mouldable through interaction and experience – instantiating sociality within the neurological (Rees, 2010).

Some analysts have greeted these developments positively, or at least with an open (if sceptical) mind towards the conceptual benefits that they might afford for sociology, anthropology, and related disciplines. The social biologies are particularly interesting to scholars who have for some time been concerned with non-deterministic ways to think with and about the body (e.g., Williams et al, 2003). Indeed, Rose (2013: 3) has recently gone so far as to suggest that 'a new relation is required with the life sciences, beyond commentary and critique, if the social and human sciences are to revitalize themselves for the 21st century'.

However, other recent engagements with the social biologies have highlighted the problematic nature of the political use of scientific research and concepts. Concerns are acute regarding the ways in which seemingly descriptive science is put to normative ends, consolidating agendas that engender controversy and critique. Such analyses draw on a significant history of social science scholarship concerned with the place, role and impact of the life sciences in policies and societies (e.g., Nelkin and Lindee, 1996; Duster, 2006).

Dialogue and debate around the utility and import of biomedical knowledge are not restricted to academic spheres. Rather, health professionals, journalists, policy makers and a range of other publics are making claims about the ontologies and future of the social biologies. In particular, the implications of neuroscience and epigenetics for wider society are increasingly being discussed, rehearsed and enacted.

## Transmissibility

Some of the greatest excitement around epigenetics pertains to how heritable epigenetic changes are, and especially modifications that have significant phenotypic effects. Yet, many scientists are concerned that work exploring intergenerational transmission has been overstated – one recent introduction to a special issue of *Neuroscience* on 'epigenetics in brain function' noted that such issues represent 'some of the most controversial topics raised in the field of epigenetics' (West and Orlando, 2014: 2). This has not, of course, restricted wider interest in the heritability of epigenetic features (Landecker and Panofsky, 2013).

This attention is not surprising. Recent UK policy has come to employ ideas, concepts and findings from the social biologies – most notably the neurosciences – to legitimate and expand existing initiatives (Wastell and White, 2012). The idea

that social experience might shape the soma can be incorporated within a range of political projects, although this has been most markedly noticeable in those concerned with the promotion of more individualist responses to health and wellbeing. Even though the configuration of the brain within social policies may not necessarily mirror that constructed through biomedical praxis, shared underlying logics of somatic malleability are nevertheless highly enabling of policy interventions that cast individuals (rather than societies) as primarily responsible for the care of future generations. This is strikingly evident in the controversial field of early intervention. Here, the 'parenting styles' of mothers especially – constituted through biography and shaped by social milieu – are sometimes framed by policy makers as impacting bodily on current and future generations.

An understanding of (anti)sociality that figures this as in some sense 'transmissible' and capable of leaving a somatic trace thus appears to be emerging within some spheres of the extensive and heterogeneous British 'policy-making community'. In recent years, this has focused on the neurological. However, the rising prominence of epigenetics enjoins us to attend to how diverse practices categorised as 'substance misuse' and 'emotional neglect' may come to be regarded as producing biological insult in more systemic (and diverse) ways. A concomitant increase in the responsibilisation and surveillance of (potential) mothers could well be a corollary of this. However, whether such attention to parenting practices can be understood as warranted is a social and political question – and not one that is readily answerable by any one epistemic tradition alone (including those associated with the social biologies).

## Conclusion

In spite of the cautions raised here, policy does not translate unproblematically into practice. We cannot assume that the provision of new biomedical vocabularies for articulating subjectivity and conceiving of intergenerational interactions will necessarily result in the universal (or even widespread) use of these novel terms, nor that they will have transformative effects on everyday life (Lock, 2013; Pickersgill et al, 2014). Further, as Singh (2012) has suggested, recognising and engaging with the normative aspects and implications of epigenetics and neuroscience does not preclude conceptual openness with regards to their contributions to sociological understandings of bodies and societies. There are, and should be, a variety of responses within and beyond the social sciences to developments in the social biologies (Pickersgill et al, 2013). This includes careful scholarship that is critical of claims made about science – particularly when used to substantiate highly contested policy – but which disaggregates these from the more nuanced claims of many scientists. In this way, the 'seductive allure' of the social biologies might become part and parcel of analysis, as opposed to solely a stimulus for it.

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## Note

<sup>1</sup> Maurizio Meloni (2014) writes of ‘social biology’, but I deliberately pluralise this to underscore the diverse epistemological and ontological agendas and positions apparent within the heterogeneous domain of the biosciences.

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